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ABSTRACT OF THE DISCLOSURE

5 A camera generates digital image signals representing an image of one
or more natural or artificial fiducials on a patient positioned on treatment or diagnosis
equipment. A processor applies multiple levels of filtering at multiple levels of
resolution to repetitively determine successive fiducial positions. A warning signal is
generated if movement exceeds certain limits but is still acceptable for treatment.
Unacceptable displacement results in termination of the treatment beam. Tracking
templates can be generated interactively from a display of the digital image signals or
through automatic selection of an image having the median correlation to an initial
10 template. A gating signal synchronized to patient breathing can be extracted from the
digital image signals for controlling the radiation beam generator.